REMARKS

Applicant acknowledges that claims 1 – 3 have been withdrawn from consideration pursuant to the Restriction Requirement in Paper No. 4.

A proposed new Fig. 1A is submitted herewith under 37 CFR 1.81 pursuant to the request of the Examiner in paragraph 3 of the current Office Action. No new matter is shown in the new Fig. 1A. Upon approval of the Examiner a new formal Fig. 1A will be submitted.

Applicant has also included a copy of Fig. 1 which shows the reference sign "C" which the Examiner has indicated is missing from the drawing. Accordingly, applicant is confused by the Examiner's request for a proposed drawing correction to show the reference sign "C". However, page 8 of the specification has been amended to identify the reference sign "C" in Fig. 1 as the exhaust of the output nozzle 21. Accordingly, the objection to the drawing should be withdrawn.

The rejections of claims 4 and 5 under 35 USC 102(b) as being anticipated by Jaeger, US. Patent No. 1,945,353 is respectfully traversed. Claim 4 has been amended to include all of the limitations in claim 6 which has been cancelled. Accordingly the rejection of claims 4 and 5 under 35 USC 102(b) should now be withdrawn. The rejection of claim 6 under 35 USC 103(a) as being unpatentable over Jaeger '353 will be treated as a rejection of claim 4 under 35 USC 103(a).

Jaeger '353 discloses a catalytic apparatus wherein the gas enters from the top and flows downwardly from the upper part into an inner tube in which the lower end thereof is closed, then flows upwardly from the lower part in the space between the inner tube and a reaction tube in which catalyst is filled. The gas thereafter flows downwardly from the catalyst filled upper part of the reaction tube.

Jaeger does not disclose a reactor "wherein a circular space surrounded by a reaction tube 3 and an inner tube 6 is constituted as a catalyst-charged part". The "catalyst-charged part" represents the circular space between the inner tube 6 and the reaction tube 3 in which a catalyst layer 13 is filled as is shown in Fig. 1A. Claim 4 now defines this circular space as the first passageway.

Further, Jaeger does not disclose a reactor having a central tube 7 with a length of between 1/10 to 2/3 of the length of the reaction tube measured from the upper end of the reaction tube as set forth in amended claim 4. Fig. 1 of Jaeger discloses a device in which open-end tubes 5 extend near to the bottom of closed-end tubes 4 as clearly described in Jaeger at page 2, lines 38 – 40 as follows: "open-end tubes 5 depending from a tube-sheet 6 extend substantially to the bottom of the closed-end tubes 6". From this description, Jaeger merely discloses a construction in which heat generated in a catalyst layer is removed from the catalyst layer entirely. It does not suggest at all how to construct a reactor so that the temperature distribution corresponding to the maximum level of the reaction rate is achieved on a temperature level where side reactions are not caused in the methanol synthesis step.

In the present invention, by adjusting the position of the lower end of the central tube with respect to the length of the reaction tube, the temperature distribution corresponding to the maximum level of the reaction rate is achieved on a temperature level where side reactions are not caused in the methanol synthesis step. This temperature distribution is determined by the adjustment of the central tube having a length of between 1/10 to 2/3 of the length of the reaction tube measured from the upper end of the reaction tube and is an essential requirement.

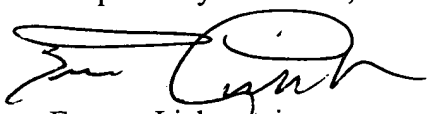
Based on the above criteria of the present invention, the synthetic reaction is allowed to proceed at the lowered peak temperature of the catalyst layer and the temperature distribution is uniform in the longitudinal direction as is described on page 15, line 7 through page 16, line 6 of the specification. The fact that Jaeger discloses a

reactor having a triple-tube construction is not relevant since when the reactor of Jaeger is used in a methanol synthesis step, the temperature distribution makes little difference from that of a conventional reactor as shown in Fig. 3(a) in the present specification. In other words, only when the reactor shown in Fig. 3(b) of the present invention is used, can the temperature distribution of a catalyst layer be controlled and the reaction efficiency be enhanced with the temperature of the catalyst layer adjusted so that the temperature does not exceed an acceptable value. Accordingly, the reactor for producing methanol of the present invention is clearly not obvious from the Jaeger.

In view of the above claim 4, as amended, is clearly patentable over Jaeger under either 35 USC 102 or 35 USC 103. Claim 5 is a dependent claim which depends from claim 4 and is therefore believed patentable for the same reasons as given above.

Reconsideration and allowance of claims 4 and 5 is respectfully solicited.

Respectfully submitted,



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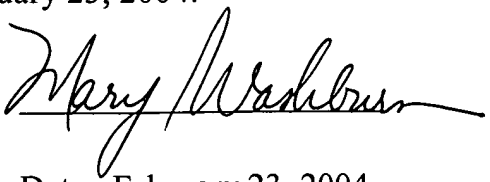
MAILING CERTIFICATE

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as first class mail in an envelope addressed: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on February 23, 2004.



Date: February 23, 2004

FIG. 1A